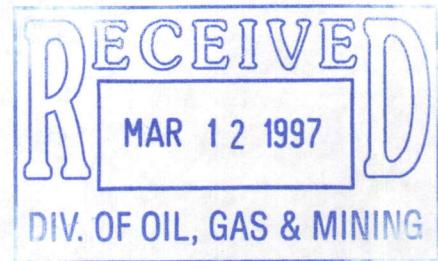


11/027/006



HANDS DELIVERED
AT MTG.

ATTACHMENT C

WATERSHED ANALYSIS
FOR WASTE ROCK DISPOSAL AREA #1

TECHNICAL MEMORANDUM

TO: Jeff Parshley, SRK - Reno

FROM: Pete Kowalewski, SRK - Denver *(PK)*

DATE: December 2, 1996

SUBJECT: Watershed Analysis for Waste Rock Disposal Area #1 at Continental Lime's Cricket Mountain Project (SRK #57705)

COPY

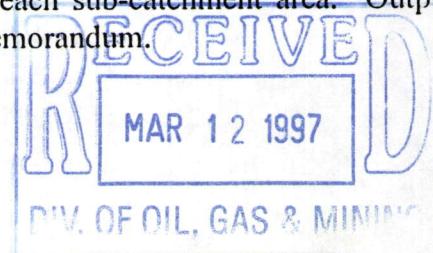
1.0 INTRODUCTION

Steffen Robertson & Kirsten (SRK) has been retained by Continental Lime, Inc. to conduct a watershed analysis to determine runoff volumes and peak flows in the watershed containing the proposed Waste Rock Disposal Area #1 at the Cricket Mountain Project site. The waste rock disposal area will be constructed in the three major drainages that convey flow from the upstream watershed, blocking these drainages, which will require flow from the upstream watershed to pass through the waste rock instead of flowing in an open channel. Using the results from the watershed analysis, the volume of water and the height of impounded water at the upstream portion of the waste rock disposal area can be calculated.

2.0 ANALYSIS

The 100-year 24-hour storm event was determined using Precipitation-Frequency Atlas of the Western United States - Volume VI - Utah (NOAA, 1973) and was determined to be 2.8 inches of precipitation in a 24-hour period. Using a soil survey map of the area, the soils of the watershed were determined to be from the Amtoft-Amtoft series. The area, gradient, and hydraulic length of each sub-catchment area were determined using topographic maps provided for the site and surrounding areas.

The watershed containing Waste Rock Disposal Area #1 was divided into eleven sub-catchment areas (see Figure 1). All of the sub-watersheds were assigned a Soil Conservation Service Curve Number (CN) of 70 based on the soil type, vegetation present, and average antecedent moisture conditions (AMC-II). The computer program, WASHED, was used to calculate both runoff volumes and peak flows due to the 100-year 24-hour storm event (2.8"/24-hr) for each sub-catchment area. Tables 1 and 2 summarize the results of the WASHED analyses performed for each sub-catchment area. Output from the WASHED program is also attached to this memorandum.



The results of the analyses were used to perform a storage-routing study to determine the maximum height of impounded water at the upstream toe of the waste rock disposal area. Flow through the waste rock was estimated using an equation developed by Leps for flow through rockfill. Calculations made to determine flow through the rockfill are attached to this memorandum.

Assuming an average channel width of 20 feet at the upstream toe of the waste rock, a relationship between discharge and the depth of the impounded water was developed. Using the computer program, HEC-1, a storage routing study was performed to estimate the maximum height of impounded water at the upstream toe of the disposal area.

It was assumed that berms, approximately 10 feet in height, would be constructed at the toe of the waste rock, and extended up the slope to provide containment of runoff within sub-catchment area #6. A sketch of the berm concept is included as Figure 2.

The results of the HEC-1 analysis shows that for the largest watershed (Sub-catchment area #6 - see Figure 1), the maximum impounded water depth would be approximately 10.5 feet. A copy of the output from HEC-1 is attached to this memorandum.

3.0 CONCLUSIONS

The results of the analyses show that the maximum depth of impounded water will occur in sub-catchment #6 (see Figure 1). If berms are constructed to allow temporary storage of runoff, the maximum depth of impounded water will be approximately 10.5 feet. The other ten sub-catchment areas will impound significantly less runoff. The largest sub-catchment areas are #6 (92.2 acres), #7 (59.2 acres), and #9 (46.2 acres). These three sub-catchment areas will require berthing to provide temporary storage of runoff. Sub-catchment #6 will require berms on the order of 10 feet high, while sub-catchment area #7 and area #9 will require berms on the order of 5 feet high. The other eight sub-catchment areas will not require berthing, as the depth of impounded water will not exceed the depth of the channels that already exist.

Assuming adequate storage is provided at the upstream toe of the waste rock disposal area through berthing, the flows from the upstream catchment area will pass through the waste rock disposal area without overtopping the waste rock.

CRICKET MOUNTAIN (SRK #57705)

11/27/96

PEK

CATCHMENT AREAS**OVERBURDEN DISPOSAL AREA #1 CATCHMENT AREAS**

ASSUMED CN FOR AMTOFT-AMTOFT SOILS = 70 (AMC-II)

ASSUMED WASTE ROCK DISPOSAL AREA = 5930 ft

CATCHMENT AREA	—MEASURED—				—FOR WASHED INPUT—			WASHED OUTPUT	
	AREA (ac)	HYDRAULIC LENGTH (ft)	MAXIMUM ELEVATION (ft)	SLOPE (%)	AREA (ha)	HYDRAULIC LENGTH (m)	SLOPE (%)	PEAK Q (m³/sec)	(cfs)
1	1.28	300	5980	16.7%	0.52	91.44	16.7%	0.03	1.06
2	1.16	300	5997.5	22.5%	0.47	91.44	22.5%	0.03	1.06
3	2.38	637.5	6100	26.7%	0.96	194.30	26.7%	0.06	2.12
4	2.75	787.5	6167.5	30.2%	1.11	240.02	30.2%	0.07	2.47
5	4.18	825	6167.5	28.8%	1.69	251.45	28.8%	0.11	3.88
6	92.2	5025	6730	15.9%	37.31	1531.55	15.9%	1.81	63.92
7	59.2	4425	6660	16.5%	23.96	1348.67	16.5%	1.20	42.38
8	4.39	600	6135	34.2%	1.78	182.87	34.2%	0.11	3.88
9	46.2	3600	6530	16.7%	18.69	1097.23	16.7%	1.03	36.37
10	10.43	1200	6277.5	29.0%	4.22	365.74	29.0%	0.27	9.53
11	4.18	1275	6177.5	19.4%	1.69	388.60	19.4%	0.11	3.88

STORM EVENT DETERMINATION

DEPTHS ESTIMATED FROM NOAA "PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES" (1973)

RECURRENCE INTERVAL	6-hr STORM DEPTH (in)	24-hr STORM DEPTH (in)
5-yr	1.1	1.5
10-yr	1.3	1.8
25-yr	1.6	2.2
100-yr	2.0	2.8

TARI F. 1

CRICKET MOUNTAIN (SRK #577705)
 12/2/96
 PEK

RUNOFF VOLUMES

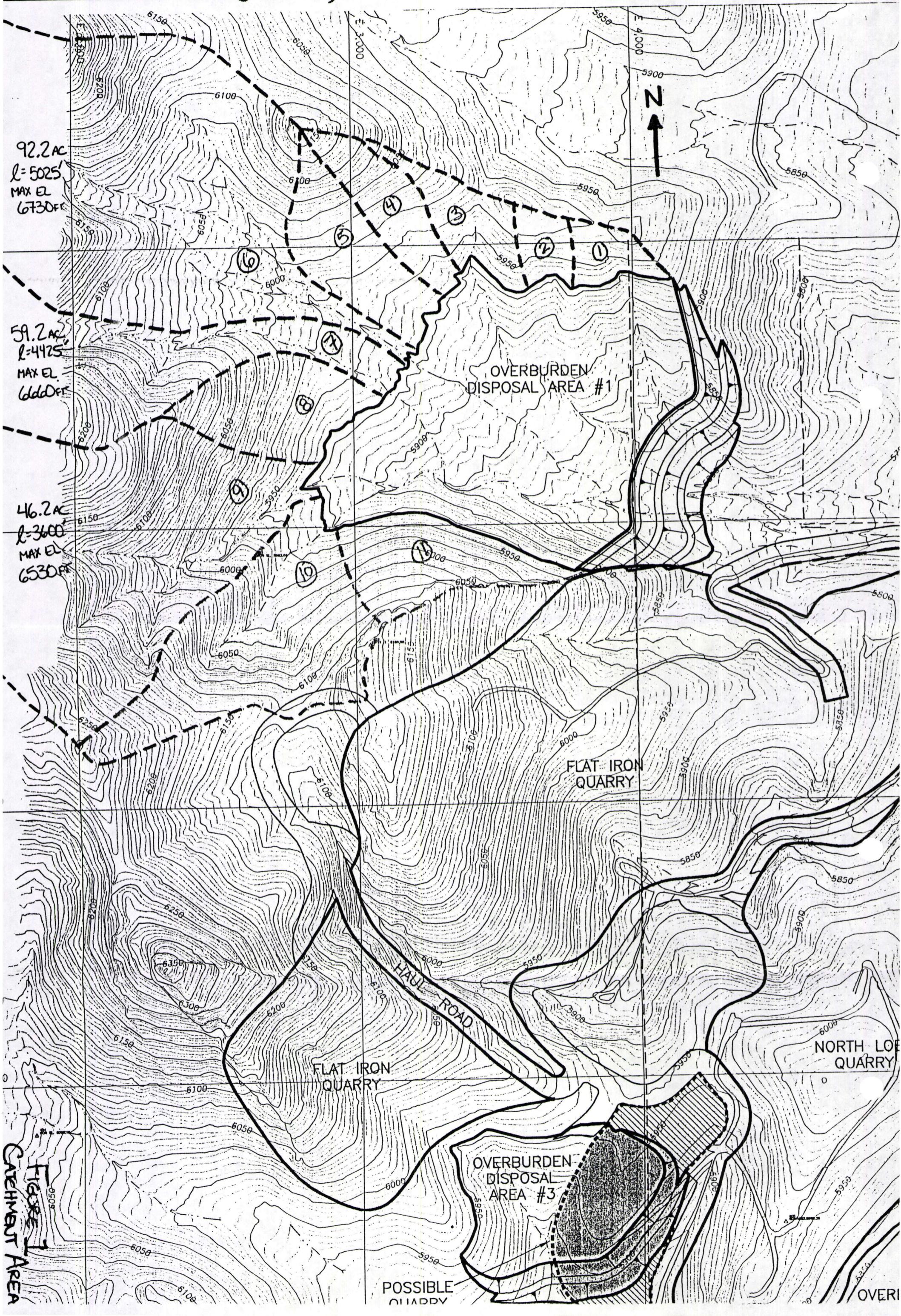
RUNOFF VOLUMES DUE TO 100-YR 24-HR STORM (2.8" / 24-HR)
 RUNOFF VOLUMES AND PEAK FLOW RATES CALCULATED USING WASHED

CATCHMENT AREA	AREA (ac)	AREA (ha)	RUNOFF VOLUME (m^3)	RUNOFF VOLUME (ft^3)	(m^3/sec)	PEAK RUNOFF (cfs)
1	1.28	0.52	80	2825	0.03	1.06
2	1.16	0.47	70	2472	0.03	1.06
3	2.38	0.96	150	5297	0.06	2.12
4	2.75	1.11	170	6003	0.07	2.47
5	4.18	1.69	260	9182	0.11	3.88
6	92.2	37.31	5690	200940	1.81	63.92
7	59.2	23.96	3660	129251	1.20	42.38
8	4.39	1.78	280	9888	0.11	3.88
9	46.2	18.69	2870	101353	1.03	36.37
10	10.43	4.22	660	23308	0.27	9.53
11	4.18	1.69	260	9182	0.11	3.88

TABLE 2

CRICKET MTN (#57705) CATCHMENT AREAS

SCALE 1"=300'



SCALE 1"=40'

TOP OF WASTE ROCK

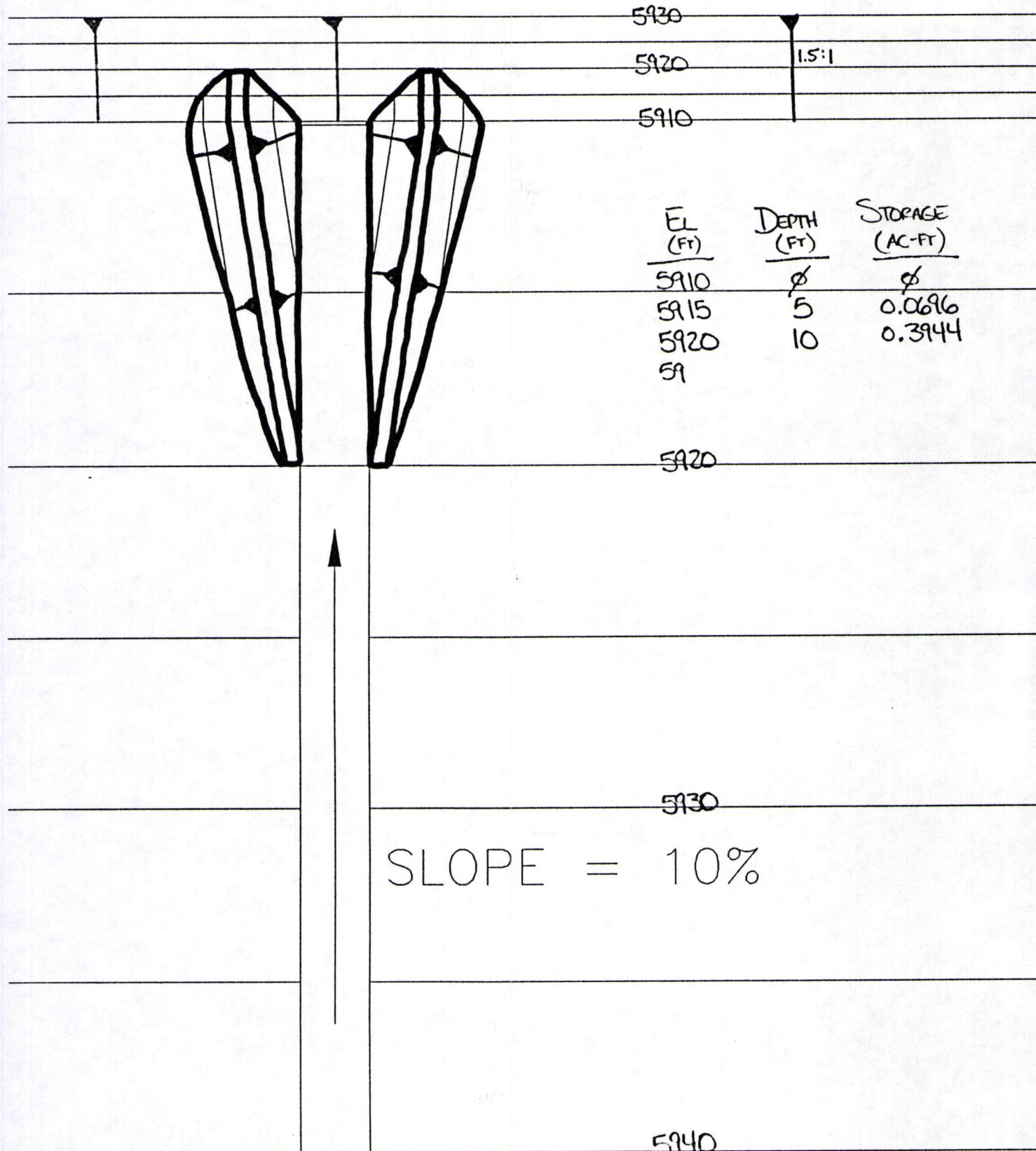


FIGURE 2

ESTIMATION OF FLOW THROUGH ROCKFILL

USING EQUATION PRESENTED BY LEPS

$$V_v = Wm^{0.5} i^{0.54}$$

WHERE V_v = VELOCITY OF WATER IN THE VOIDS OF THE ROCKFILL

W = EMPIRICAL CONSTANT FOR ROCKFILL MATERIAL, DEPENDS PRIMARILY ON SHAPE AND ROUGHNESS. W RANGES FROM $33 \text{ IN/SEC} \rightarrow 46 \text{ IN/SEC}$
(CRUSHED GRAVEL \rightarrow POLISHED MARBLES)

 m = HYDRAULIC MEAN RADIUS, IN. i = HYDRAULIC GRADIENT, FT/FT (BETWEEN 0 AND 1)

→ USE THE CONSERVATIVE ASSUMPTION THAT MINIMUM ROCK SIZE IS 2 INCHES.

BASED ON DATA PRESENTED BY LEPS FOR A HOMOGENEOUS ROCKFILL

Rock size = 2 inches $\Rightarrow m = 0.24$

→ ASSUME $W = 33 \text{ IN/SEC}$ (CONSERVATIVE)→ GRADIENT UNDER UPPER PORTION OF WASTE ROCK DISPOSAL AREA RANGES FROM 0.1000 FT/FT TO 0.1333 FT/FT . LOOK AT BOTH THE MINIMUM AND MAXIMUM CASE.→ ASSUME ROCKFILL POROSITY = 40% ($V_v/V_t = 0.40$)FOR GRADIENT = 0.1000 FT/FT ,

$$V_v = (33 \text{ IN/SEC})(0.24)^{0.5} (0.1000)^{0.54}$$

$$V_v = 4.67 \text{ IN/SEC} = 0.389 \text{ FT/SEC}$$

ASSUMING POROSITY $\chi = 0.40$, FOR EVERY 1 FT^2 OF WASTE ROCK AREA THERE ARE 0.40 FT^2 OF VOID SPACEAPPLYING CONTINUITY, $Q = VA$

$$Q = (0.389 \text{ FT/SEC})(0.40 \text{ FT}^2)$$

$$Q = 0.155 \text{ FT}^3/\text{SEC}$$

FOR EVERY 1 FT^2 OF WASTE ROCK 0.155 CFS WILL PASS THROUGHFOR GRADIENT = 0.1333 FT/FT ,

$$V_v = 5.45 \text{ IN/SEC} = 0.454 \text{ FT/SEC}$$

APPLYING CONTINUITY, $Q = VA$

$$Q = (0.454 \text{ FT/SEC})(0.40 \text{ FT}^2)$$

$$Q = 0.182 \text{ FT}^3/\text{SEC}$$



FOR GRADIENT = 0.1000 FT/FT $\Rightarrow Q = 0.155 \text{ CFS/FT}^2$ OF WASTE ROCK
 GRADIENT = 0.1333 FT/FT $\Rightarrow Q = 0.182 \text{ CFS/FT}^2$ OF WASTE ROCK

CHANNELS ENTERING UPPER WASTE ROCK AREA APPEAR TO HAVE AVERAGE WIDTH OF APPROXIMATELY 20 FT.

ASSUMING AN AVERAGE CHANNEL WIDTH OF 20 FT, THE CHANNELS WILL PASS THE FOLLOWING FLOWS:

CHANNEL GRADIENT = 0.1000 FT/FT $\Rightarrow 3.1 \text{ CFS/FT}$ OF CHANNEL DEPTH
 CHANNEL GRADIENT = 0.1333 FT/FT $\Rightarrow 3.64 \text{ CFS/FT}$ OF CHANNEL DEPTH

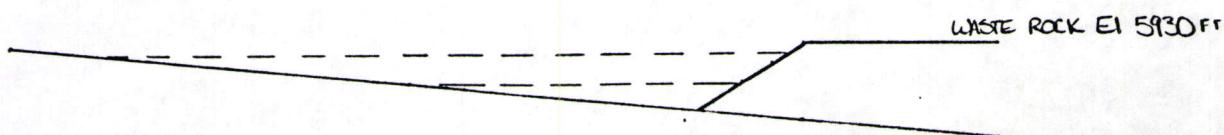
LOOK AT RUNOFF FROM SUBWATERSHED #6 AS WORST CASE.

PEAK $Q = 63.92 \text{ CFS}$ (FROM WASHED OUTPUT) \rightarrow OUTPUT ATTACHED

APPROXIMATE CHANNEL WIDTH IS 20 FT.

ASSUMING A RECTANGULAR CHANNEL CONFIGURATION, APPROXIMATELY 17.6 FT OF DEPTH IS REQUIRED (TOTAL SURFACE AREA OF WASTE ROCK = 352 FT^2).

IF CHANNEL CAN BE WIDENED LOCALLY IN VICINITY OF WASTE ROCK TO 50 FT WIDE, DEPTH REQUIRED WOULD ONLY BE 7.0 FT (APPROX.).



A STORAGE-ROUTING ANALYSIS WILL BE PERFORMED USING HEC-1 TO DETERMINE THE REQUIRED HEIGHT OF THE BERMS.

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*
* H Y D R O L O G I C A L S Y S T E M S *
*

*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB1-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #1

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : .52
HYDRAULIC LENGTH (m.) : 91.44
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 16.70
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH GENERATED FROM START OF RAINFALL *****

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.0 *	.0									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .08 thousand cu.m.
 PEAK RUNOFF RATE = .03 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

=====

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

=====

STORM HYDROGRAF DR WATERSHED WASTE ROCK #1

=====

TOTAL AREA OF THE WATERSHED	=	.52	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.08	thousand cu.m.
PEAK RUNOFF RATE	=	.03	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	4	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .0 .0

=====

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*****  
*  
*      H Y D R O L O G I C A L      S Y S T E M S      *  
*  
*****  
*  
*      PROGRAM      -      WASHED      *  
*  
*      WATERSHED MODELLING      *  
*  
*      PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS      *  
*      AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS      *  
*  
*****
```

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB2-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

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=====
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WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL	(mm.)	:	71.12
INITIAL ABSTRACTION	(mm.)	:	.00
-- will default to the SCS method			
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF	:		.10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #2

RAINFALL PARAMETERS

SCS CURVE NUMBER	:	70.00
UNIT HYDROGRAPH SELECTED	:	HAANS

MAP PARAMETERS

AREA	(ha.)	:	.47
HYDRAULIC LENGTH	(m.)	:	91.44
PERCENT FOREST	(%)	:	.00
PERCENT AGRICULTURE	(%)	:	.00
PERCENT GRASSLAND	(%)	:	.00
OVERLAND FLOW SLOPE	(%)	:	22.50
CHANNEL SLOPE	(%)	:	.01
CHANNEL LENGTH FROM SUBWATERSHED	(m.)	:	.00
TYPE OF CHANNEL FROM SUBWATERSHED	:		A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA	:		1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS	:		1.00
AREAL REDUCTION FACTOR	:		1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

=====

STORM HYDROGRAPH SET

ATED FROM START OF RAINFALL

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.0 *	.0									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .07 thousand cu.m.
 PEAK RUNOFF RATE = .03 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

===== STORM HYDROGRAPH OR WATERSHED WASTE ROCK #1 =====

TOTAL AREA OF THE WATERSHED	=	.47	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.07	thousand cu.m.
PEAK RUNOFF RATE	=	.03	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	4	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .0 .0

*
* H Y D R O L O G I C A L S Y S T E M S *
*

*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB3-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

=====

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #3

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : .96
HYDRAULIC LENGTH (m.) : 194.30
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 26.70
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

=====

STORM HYDROGRAPH FROM UNIT HYDROGRAPH

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.0 *	.1									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .15 thousand cu.m.
 PEAK RUNOFF RATE = .06 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

=====

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

=====

TOTAL AREA OF THE WATERSHED	=	.96	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.15	thousand cu.m.
PEAK RUNOFF RATE	=	.06	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	4	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .0 .1

=====

=====

* * H Y D R O L O G I C A L S Y S T E M S * *
* *

* *
* * PROGRAM - WASHED * *
* *
* * WATERSHED MODELLING * *
* *
* * PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS * *
* * AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS * *
* *

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

=====

THE INPUT DATA FILE IS :SUB4-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

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WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #4

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 1.11
HYDRAULIC LENGTH (m.) : 240.02
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 30.20
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH GENERATED FROM START OF RAINFALL *****

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.0 *	.1									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .17 thousand cu.m.
 PEAK RUNOFF RATE = .07 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

===== STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1 =====

TOTAL AREA OF THE WATERSHED	=	1.11	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.17	thousand cu.m.
PEAK RUNOFF RATE	=	.07	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	4	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .1 .1

*
* H Y D R O L O G I C A L S Y S T E M S *
*

*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB5-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #5

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 1.69
HYDRAULIC LENGTH (m.) : 251.45
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 28.80
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

STORM HYDROGRAPH FOR RIVER REACH

RTED FROM START OF RAINFALL

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
12.0 *	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
13.0 *	.0	.0	.0	.0						

INITIAL ABSTRACTION	=	21.77	mm.
ROUTED FLOW TIME FROM THE SUBWATERSHED	=	.00	hours.
TIME TO PEAK OF UNIT HYDROGRAPH	=	.05	hours.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.26	thousand cu.m.
PEAK RUNOFF RATE	=	.11	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

===== STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1 =====

TOTAL AREA OF THE WATERSHED = 1.69 ha.
THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
VOLUME OF RUNOFF = .26 thousand cu.m.
PEAK RUNOFF RATE = .11 cu. m./sec.
TIME TO PEAK RUNOFF = 12.05 hours.
TIME INCREMENT OF NEW HYDROGRAPH = .10 hours.
NUMBER OF RUNOFF VALUES = 17

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .1 .1 .0 .0 .0 .0 .0 .0
.0 .0 .0 .0 .0 .0 .0

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* HYDROLOGICAL SYSTEMS
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* PROGRAM - WASHED
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* WATERSHED MODELLING
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* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS
*

RUNOFF HYDROGRAPH FOR
SUBWATERSHED #6
DUE TO 100-YR 24-HR
STORM (2.8 IN/24 HR)

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS : SUB6-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #6

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 37.31
HYDRAULIC LENGTH (m.) : 1531.55
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 15.90
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH GENERATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.2	.6	
12.0 *	1.3	1.8	.9	.4	.3	.3	.2	.2	.2	.2
13.0 *	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
14.0 *	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1
15.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
16.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
17.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
18.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
19.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
20.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
21.0 *	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0
22.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24.0 *	.0									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .12 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.27 mm.
 VOLUME OF RUNOFF = 5.69 thousand cu.m.
 PEAK RUNOFF RATE = 1.81 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.10 hours.

=====

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

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===== STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1 =====

TOTAL AREA OF THE WATERSHED = 37.31 ha.
THE DEPTH OF WATER ON WATERSHED = 15.27 mm.
VOLUME OF RUNOFF = 5.69 thousand cu.m.
PEAK RUNOFF RATE = 1.81 cu. m./sec.
TIME TO PEAK RUNOFF = 12.10 hours.
TIME INCREMENT OF NEW HYDROGRAPH = .10 hours.
NUMBER OF RUNOFF VALUES = 125

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0	.2	.6	1.3	1.8	.9	.4	.3	.3	.2
.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
.2	.2	.2	.2	.2	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
.0	.0	.0	.0	.0					

*
* HYDROLOGICAL SYSTEMS
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*
* PROGRAM - WASHED
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* WATERSHED MODELLING
*
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB7-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #7

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 23.96
HYDRAULIC LENGTH (m.) : 1348.67
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 16.50
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH GENERATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9

.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.2	.5	
12.0 *	1.0	1.2	.4	.2	.2	.2	.2	.2	.2	.2
13.0 *	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1
14.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
15.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
16.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
17.0 *	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0
18.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24.0 *	.0									

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .10 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.30 mm.
 VOLUME OF RUNOFF = 3.66 thousand cu.m.
 PEAK RUNOFF RATE = 1.20 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

TOTAL AREA OF THE WATERSHED	=	23.96	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.30	mm.
VOLUME OF RUNOFF	=	3.66	thousand cu.m.
PEAK RUNOFF RATE	=	1.20	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	124	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

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* H Y D R O L O G I C A L S Y S T E M S *
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*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB8-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED :SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #8

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 1.78
HYDRAULIC LENGTH (m.) : 182.87
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 34.20
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH G₁ RATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
12.0 *	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
13.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .28 thousand cu.m.
 PEAK RUNOFF RATE = .11 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

TOTAL AREA OF THE WATERSHED	=	1.78	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.28	thousand cu.m.
PEAK RUNOFF RATE	=	.11	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	20	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .1 .1 .0 .0 .0 .0 .0 .0 .0

*
* H Y D R O L O G I C A L S Y S T E M S *
*

*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB9-100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #9

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 18.69
HYDRAULIC LENGTH (m.) : 1097.23
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 16.70
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH GENERATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.2	.4	
12.0 *	.9	.8	.2	.1	.1	.1	.1	.1	.1	.1
13.0 *	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
14.0 *	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0
15.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .08 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.39 mm.
 VOLUME OF RUNOFF = 2.88 thousand cu.m.
 PEAK RUNOFF RATE = 1.03 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

=====

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

=====

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

TOTAL AREA OF THE WATERSHED	=	18.69	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.39	mm.
VOLUME OF RUNOFF	=	2.87	thousand cu.m.
PEAK RUNOFF RATE	=	1.03	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	124	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

*
* H Y D R O L O G I C A L S Y S T E M S *
*

*
* PROGRAM - WASHED *
*
* WATERSHED MODELLING *
*
* PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS *
* AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS *
*

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB10100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #10

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 4.22
HYDRAULIC LENGTH (m.) : 365.74
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 29.00
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH C RATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.1	.1	
12.0 *	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0
13.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16.0 *	.0	.0								

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.59 mm.
 VOLUME OF RUNOFF = .66 thousand cu.m.
 PEAK RUNOFF RATE = .27 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

=====

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

=====

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

TOTAL AREA OF THE WATERSHED	=	4.22	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.59	mm.
VOLUME OF RUNOFF	=	.66	thousand cu.m.
PEAK RUNOFF RATE	=	.27	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	46	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

```
*****  
*  
*      H Y D R O L O G I C A L      S Y S T E M S      *  
*  
*****  
*  
*      PROGRAM      -      WASHED      *  
*  
*      WATERSHED MODELLING      *  
*  
*      PROGRAM TO DETERMINE RUNOFF HYDROGRAPHS      *  
*      AND SEDIMENTGRAPHS FOR SMALL CATCHMENTS      *  
*  
*****
```

COMPANY DOING ANALYSIS : SRK
ENGINEER : PEK
DATE : 27-NOV-96
CLIENT : CONTINENTAL LIME
PROJECT DESCRIPTION : CRICKET MOUNTAIN
MAJOR WATERSHED NAME : WASTE ROCK #1

THE INPUT DATA FILE IS :SUB11100.I
THE FLOOD HYDROGRAPH AND SEDIMENTGRAPH IS NOT STORED

WATERSHED CONDITIONS AT WASTE ROCK #1

GLOBAL PARAMETERS

RAINFALL (mm.) : 71.12
INITIAL ABSTRACTION (mm.) : .00
-- will default to the SCS method
TIME INCREMENT OF HYDROGRAPH FROM START OF RUNOFF : .10

RAINFALL DISTRIBUTION SELECTED : SCS TYPE 2 CURVE

SUBWATERSHED CONDITIONS AT SUB #11

RAINFALL PARAMETERS

SCS CURVE NUMBER : 70.00
UNIT HYDROGRAPH SELECTED : HAANS

MAP PARAMETERS

AREA (ha.) : 1.69
HYDRAULIC LENGTH (m.) : 388.60
PERCENT FOREST (%) : .00
PERCENT AGRICULTURE (%) : .00
PERCENT GRASSLAND (%) : .00
OVERLAND FLOW SLOPE (%) : 19.40
CHANNEL SLOPE (%) : .01
CHANNEL LENGTH FROM SUBWATERSHED (m.) : .00
TYPE OF CHANNEL FROM SUBWATERSHED : A NATURAL STREAM
CORRECTION FACTOR FOR IMPERVIOUS AREA : 1.00
CORRECTION FACTOR FOR CHANNEL IMPROVEMENTS : 1.00
AREAL REDUCTION FACTOR : 1.00

SEDIMENT PARAMETERS

THERE IS NO SEDIMENT DATA FOR THIS SUBWATERSHED

***** STORM HYDROGRAPH G DATED FROM START OF RAINFALL *

TIME *	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11.0 *	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
12.0 *	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
13.0 *	.0	.0	.0	.0						

INITIAL ABSTRACTION = 21.77 mm.
 ROUTED FLOW TIME FROM THE SUBWATERSHED = .00 hours.
 TIME TO PEAK OF UNIT HYDROGRAPH = .05 hours.
 THE DEPTH OF WATER ON WATERSHED = 15.58 mm.
 VOLUME OF RUNOFF = .26 thousand cu.m.
 PEAK RUNOFF RATE = .11 cu. m./sec.
 TIME TO PEAK RUNOFF = 12.05 hours.

THERE IS NO SEDIMENT CONTAINED IN THE STORM RUNOFF FROM THIS WATERSHED

STORM HYDROGRAPH FOR WATERSHED WASTE ROCK #1

TOTAL AREA OF THE WATERSHED	=	1.69	ha.
THE DEPTH OF WATER ON WATERSHED	=	15.58	mm.
VOLUME OF RUNOFF	=	.26	thousand cu.m.
PEAK RUNOFF RATE	=	.11	cu. m./sec.
TIME TO PEAK RUNOFF	=	12.05	hours.
TIME INCREMENT OF NEW HYDROGRAPH	=	.10	hours.
NUMBER OF RUNOFF VALUES	=	17	

***** STORM HYDROGRAPH GENERATED FROM START OF RUNOFF *****

.0 .0 .1 .1 .0 .0 .0 .0 .0 .0 .0

```
*****
*          *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1)  *
*   MAY 1991                         *
*   VERSION 4.0.1E                     *
*          *
*   RUN DATE 12/02/1996 TIME 14:01:54 *
*          *
```

```
*****
*          *
*   U.S. ARMY CORPS OF ENGINEERS      *
*   HYDROLOGIC ENGINEERING CENTER    *
*   609 SECOND STREET                 *
*   DAVIS, CALIFORNIA 95616          *
*   (916) 756-1104                  *
*          *
```

```
      X      X  XXXXXX  XXXXX      X
      X      X  X           X      X      XX
      X      X  X           X
      XXXXXX  XXXX      X      XXXXX  X
      X      X  X           X
      X      X  X           X      X
      X      X  XXXXXX  XXXXX      XXX
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::::::::::
::::::::::
:::      :::
:::  Full Microcomputer Implementation  :::
:::      by
:::      Haestad Methods, Inc.          :::
:::      :::
::::::::::
::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

1 ID CRICKET MOUNTAIN (SRK #57705)
 2 ID 100-YR 24-HR STORM (2.8" TOTAL)
 3 ID FLOW THROUGH WEASTE ROCK ESTIMATED USING LEPS EQ FOR ROCKFILL
 4 ID ASSUMING 20-FT WIDE CHANNEL AT WASTE ROCK FACE

*
 5 IT 6 15SEP99 1300 240
 6 IO 2 0 0
 *

7 KK FACE INFLOW HYDROGRAPH TO WASTE ROCK FACE FROM CATCHMENT AREA
 8 KM INFLOW HYDROGRAPH CALCULATED BY WASHED

9 BA 0.144
 10 QI 0 7.1 21.2 45.9 63.6 31.8 14.1 10.6 10.6 7.1
 11 QI 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1
 12 QI 7.1 7.1 7.1 7.1 7.1 3.5 3.5 3.5 3.5 3.5
 13 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 14 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 15 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 16 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 17 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 18 QI 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
 19 QI 3.2 2.8 2.5 2.1 1.8 0.0 0.0 0.0 0.0 0.0
 *

20 KK FLOW FLOW THROUGH WASTE ROCK - 20 FT BOTTOM
 21 KM ROUTE FLOW THROUGH WASTE ROCK
 22 KO 1 2
 23 RS 1 STOR 0 0
 24 SV 0 0.0696 0.3944 1.0758 2.2250
 25 SE 0 5 10 15 20
 26 SQ 0 3.64 7.28 10.92 14.56 18.20 21.84 25.48 29.12 32.76
 27 SQ 36.40 54.60 72.80
 28 SE 0 1 2 3 4 5 6 7 8 9
 29 SE 10 15 20
 *

30 ZZ

```
*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* RUN DATE 12/02/1996 TIME 14:01:54 *
*****
```

```
*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****
```

CRICKET MOUNTAIN (SRK #57705)
 100-YR 24-HR STORM (2.8" TOTAL)
 FLOW THROUGH WASTE ROCK ESTIMATED USING LEPS EQ FOR ROCKFILL
 ASSUMING 20-FT WIDE CHANNEL AT WASTE ROCK FACE

6 IO OUTPUT CONTROL VARIABLES

IPRNT	2	PRINT CONTROL
IPILOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	6	MINUTES IN COMPUTATION INTERVAL
IDATE	15SEP99	STARTING DATE
ITIME	1300	STARTING TIME
NQ	240	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	16SEP99	ENDING DATE
NDTIME	1254	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.10 HOURS
 TOTAL TIME BASE 23.90 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

 * * * * *
 7 KK * FACE * INFLOW HYDROGRAPH TO WASTE ROCK FACE FROM CATCHMENT AREA
 * * * * *

INFLOW HYDROGRAPH CALCULATED BY WASHED

SUBBASIN RUNOFF DATA

9 BA

SUBBASIN CHARACTERISTICS

TAREA 0.14 SUBBASIN AREA

HYDROGRAPH AT STATION FACE

DA	MON	HRMN	ORD	*				*				*				FLOW			
				FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD
15 SEP 1300	1		0.	*	15 SEP 1900	61		4.	*	16 SEP 0100	121		2.	*	16 SEP 0700	181		2.	
15 SEP 1306	2		7.	*	15 SEP 1906	62		4.	*	16 SEP 0106	122		2.	*	16 SEP 0706	182		2.	
15 SEP 1312	3		21.	*	15 SEP 1912	63		4.	*	16 SEP 0112	123		2.	*	16 SEP 0712	183		2.	
15 SEP 1318	4		46.	*	15 SEP 1918	64		4.	*	16 SEP 0118	124		2.	*	16 SEP 0718	184		2.	
15 SEP 1324	5		64.	*	15 SEP 1924	65		4.	*	16 SEP 0124	125		2.	*	16 SEP 0724	185		2.	
15 SEP 1330	6		32.	*	15 SEP 1930	66		4.	*	16 SEP 0130	126		2.	*	16 SEP 0730	186		2.	
15 SEP 1336	7		14.	*	15 SEP 1936	67		4.	*	16 SEP 0136	127		2.	*	16 SEP 0736	187		2.	
15 SEP 1342	8		11.	*	15 SEP 1942	68		4.	*	16 SEP 0142	128		2.	*	16 SEP 0742	188		2.	
15 SEP 1348	9		11.	*	15 SEP 1948	69		4.	*	16 SEP 0148	129		2.	*	16 SEP 0748	189		2.	
15 SEP 1354	10		7.	*	15 SEP 1954	70		4.	*	16 SEP 0154	130		2.	*	16 SEP 0754	190		2.	
15 SEP 1400	11		7.	*	15 SEP 2000	71		4.	*	16 SEP 0200	131		2.	*	16 SEP 0800	191		2.	
15 SEP 1406	12		7.	*	15 SEP 2006	72		4.	*	16 SEP 0206	132		2.	*	16 SEP 0806	192		2.	
15 SEP 1412	13		7.	*	15 SEP 2012	73		4.	*	16 SEP 0212	133		2.	*	16 SEP 0812	193		2.	
15 SEP 1418	14		7.	*	15 SEP 2018	74		4.	*	16 SEP 0218	134		2.	*	16 SEP 0818	194		2.	
15 SEP 1424	15		7.	*	15 SEP 2024	75		4.	*	16 SEP 0224	135		2.	*	16 SEP 0824	195		2.	
15 SEP 1430	16		7.	*	15 SEP 2030	76		4.	*	16 SEP 0230	136		2.	*	16 SEP 0830	196		2.	
15 SEP 1436	17		7.	*	15 SEP 2036	77		4.	*	16 SEP 0236	137		2.	*	16 SEP 0836	197		2.	
15 SEP 1442	18		7.	*	15 SEP 2042	78		4.	*	16 SEP 0242	138		2.	*	16 SEP 0842	198		2.	
15 SEP 1448	19		7.	*	15 SEP 2048	79		4.	*	16 SEP 0248	139		2.	*	16 SEP 0848	199		2.	
15 SEP 1454	20		7.	*	15 SEP 2054	80		4.	*	16 SEP 0254	140		2.	*	16 SEP 0854	200		2.	
15 SEP 1500	21		7.	*	15 SEP 2100	81		4.	*	16 SEP 0300	141		2.	*	16 SEP 0900	201		2.	
15 SEP 1506	22		7.	*	15 SEP 2106	82		4.	*	16 SEP 0306	142		2.	*	16 SEP 0906	202		2.	
15 SEP 1512	23		7.	*	15 SEP 2112	83		4.	*	16 SEP 0312	143		2.	*	16 SEP 0912	203		2.	
15 SEP 1518	24		7.	*	15 SEP 2118	84		4.	*	16 SEP 0318	144		2.	*	16 SEP 0918	204		2.	
15 SEP 1524	25		7.	*	15 SEP 2124	85		4.	*	16 SEP 0324	145		2.	*	16 SEP 0924	205		2.	
15 SEP 1530	26		4.	*	15 SEP 2130	86		4.	*	16 SEP 0330	146		2.	*	16 SEP 0930	206		2.	
15 SEP 1536	27		4.	*	15 SEP 2136	87		4.	*	16 SEP 0336	147		2.	*	16 SEP 0936	207		2.	
15 SEP 1542	28		4.	*	15 SEP 2142	88		4.	*	16 SEP 0342	148		2.	*	16 SEP 0942	208		2.	
15 SEP 1548	29		4.	*	15 SEP 2148	89		4.	*	16 SEP 0348	149		2.	*	16 SEP 0948	209		2.	
15 SEP 1554	30		4.	*	15 SEP 2154	90		4.	*	16 SEP 0354	150		2.	*	16 SEP 0954	210		2.	
15 SEP 1600	31		4.	*	15 SEP 2200	91		3.	*	16 SEP 0400	151		2.	*	16 SEP 1000	211		2.	
15 SEP 1606	32		4.	*	15 SEP 2206	92		3.	*	16 SEP 0406	152		2.	*	16 SEP 1006	212		2.	
15 SEP 1612	33		4.	*	15 SEP 2212	93		3.	*	16 SEP 0412	153		2.	*	16 SEP 1012	213		2.	
15 SEP 1618	34		4.	*	15 SEP 2218	94		2.	*	16 SEP 0418	154		2.	*	16 SEP 1018	214		2.	
15 SEP 1624	35		4.	*	15 SEP 2224	95		2.	*	16 SEP 0424	155		2.	*	16 SEP 1024	215		2.	
15 SEP 1630	36		4.	*	15 SEP 2230	96		2.	*	16 SEP 0430	156		2.	*	16 SEP 1030	216		2.	
15 SEP 1636	37		4.	*	15 SEP 2236	97		2.	*	16 SEP 0436	157		2.	*	16 SEP 1036	217		2.	
15 SEP 1642	38		4.	*	15 SEP 2242	98		2.	*	16 SEP 0442	158		2.	*	16 SEP 1042	218		2.	
15 SEP 1648	39		4.	*	15 SEP 2248	99		2.	*	16 SEP 0448	159		2.	*	16 SEP 1048	219		2.	
15 SEP 1654	40		4.	*	15 SEP 2254	100		2.	*	16 SEP 0454	160		2.	*	16 SEP 1054	220		2.	
15 SEP 1700	41		4.	*	15 SEP 2300	101		2.	*	16 SEP 0500	161		2.	*	16 SEP 1100	221		2.	
15 SEP 1706	42		4.	*	15 SEP 2306	102		2.	*	16 SEP 0506	162		2.	*	16 SEP 1106	222		2.	
15 SEP 1712	43		4.	*	15 SEP 2312	103		2.	*	16 SEP 0512	163		2.	*	16 SEP 1112	223		2.	
15 SEP 1718	44		4.	*	15 SEP 2318	104		2.	*	16 SEP 0518	164		2.	*	16 SEP 1118	224		2.	
15 SEP 1724	45		4.	*	15 SEP 2324	105		2.	*	16 SEP 0524	165		2.	*	16 SEP 1124	225		2.	

15 SEP 1730	46	4.	*	15 SEP 1	106	2.	*	16 SEP 0530	166	2.	*	16 SEP 1130	226	2.
15 SEP 1736	47	4.	*	15 SEP 2336	107	2.	*	16 SEP 0536	167	2.	*	16 SEP 1136	227	2.
15 SEP 1742	48	4.	*	15 SEP 2342	108	2.	*	16 SEP 0542	168	2.	*	16 SEP 1142	228	2.
15 SEP 1748	49	4.	*	15 SEP 2348	109	2.	*	16 SEP 0548	169	2.	*	16 SEP 1148	229	2.
15 SEP 1754	50	4.	*	15 SEP 2354	110	2.	*	16 SEP 0554	170	2.	*	16 SEP 1154	230	2.
15 SEP 1800	51	4.	*	16 SEP 0000	111	2.	*	16 SEP 0600	171	2.	*	16 SEP 1200	231	2.
15 SEP 1806	52	4.	*	16 SEP 0006	112	2.	*	16 SEP 0606	172	2.	*	16 SEP 1206	232	2.
15 SEP 1812	53	4.	*	16 SEP 0012	113	2.	*	16 SEP 0612	173	2.	*	16 SEP 1212	233	2.
15 SEP 1818	54	4.	*	16 SEP 0018	114	2.	*	16 SEP 0618	174	2.	*	16 SEP 1218	234	2.
15 SEP 1824	55	4.	*	16 SEP 0024	115	2.	*	16 SEP 0624	175	2.	*	16 SEP 1224	235	2.
15 SEP 1830	56	4.	*	16 SEP 0030	116	2.	*	16 SEP 0630	176	2.	*	16 SEP 1230	236	2.
15 SEP 1836	57	4.	*	16 SEP 0036	117	2.	*	16 SEP 0636	177	2.	*	16 SEP 1236	237	2.
15 SEP 1842	58	4.	*	16 SEP 0042	118	2.	*	16 SEP 0642	178	2.	*	16 SEP 1242	238	2.
15 SEP 1848	59	4.	*	16 SEP 0048	119	2.	*	16 SEP 0648	179	2.	*	16 SEP 1248	239	2.
15 SEP 1854	60	4.	*	16 SEP 0054	120	2.	*	16 SEP 0654	180	2.	*	16 SEP 1254	240	2.
		*				*				*				*

PEAK FLOW

TIME

MAXIMUM AVERAGE FLOW

	6-HR	24-HR	72-HR	23.90-HR	(CFS)	(HR)
(CFS)	64.	0.40		7.	3.	3.
(INCHES)	0.476	0.881	0.881	0.881		
(AC-FT)	4.	7.	7.	7.		

CUMULATIVE AREA = 0.14 SQ MI

20 KK

FLOW * FLOW THROUGH WASTE ROCK - 20 FT BOTTOM

22 KO

OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPILOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

23 RS

STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	0.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

24 SV

STORAGE 0.0 0.1 0.4 1.1 2.2

25 SE

ELEVATION 0.00 5.00 10.00 15.00 20.00

1

26 SQ

DISCHARGE 0. 4. 7. 11. 15. 18. 22. 25. 29. 33.

36. 55. 73.

28 SE

ELEVATION 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00

10.00 0 20.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.01	0.03	0.04	0.06	0.07	0.13	0.20	0.26	0.33
OUTFLOW	0.00	3.64	7.28	10.92	14.56	18.20	21.84	25.48	29.12	32.76
ELEVATION	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
STORAGE	0.39	1.08	2.22							
OUTFLOW	36.40	54.60	72.80							
ELEVATION	10.00	15.00	20.00							

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 18.
 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

HYDROGRAPH AT STATION FLOW

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	SEP	1300	1	0.	0.0	0.0	*	15	SEP	2100	81	4.	0.0	1.0	*	16	SEP	0500	161	2.	0.0	0.5	
15	SEP	1306	2	4.	0.0	1.0	*	15	SEP	2106	82	4.	0.0	1.0	*	16	SEP	0506	162	2.	0.0	0.5	
15	SEP	1312	3	15.	0.1	4.0	*	15	SEP	2112	83	4.	0.0	1.0	*	16	SEP	0512	163	2.	0.0	0.5	
15	SEP	1318	4	24.	0.2	6.6	*	15	SEP	2118	84	4.	0.0	1.0	*	16	SEP	0518	164	2.	0.0	0.5	
15	SEP	1324	5	36.	0.4	9.8	*	15	SEP	2124	85	4.	0.0	1.0	*	16	SEP	0524	165	2.	0.0	0.5	
15	SEP	1330	6	38.	0.5	10.5	*	15	SEP	2130	86	4.	0.0	1.0	*	16	SEP	0530	166	2.	0.0	0.5	
15	SEP	1336	7	34.	0.4	9.4	*	15	SEP	2136	87	4.	0.0	1.0	*	16	SEP	0536	167	2.	0.0	0.5	
15	SEP	1342	8	26.	0.2	7.2	*	15	SEP	2142	88	4.	0.0	1.0	*	16	SEP	0542	168	2.	0.0	0.5	
15	SEP	1348	9	20.	0.1	5.6	*	15	SEP	2148	89	4.	0.0	1.0	*	16	SEP	0548	169	2.	0.0	0.5	
15	SEP	1354	10	12.	0.0	3.3	*	15	SEP	2154	90	4.	0.0	1.0	*	16	SEP	0554	170	2.	0.0	0.5	
15	SEP	1400	11	7.	0.0	1.9	*	15	SEP	2200	91	3.	0.0	0.9	*	16	SEP	0600	171	2.	0.0	0.5	
15	SEP	1406	12	7.	0.0	2.0	*	15	SEP	2206	92	3.	0.0	0.8	*	16	SEP	0606	172	2.	0.0	0.5	
15	SEP	1412	13	7.	0.0	2.0	*	15	SEP	2212	93	3.	0.0	0.7	*	16	SEP	0612	173	2.	0.0	0.5	
15	SEP	1418	14	7.	0.0	2.0	*	15	SEP	2218	94	2.	0.0	0.6	*	16	SEP	0618	174	2.	0.0	0.5	
15	SEP	1424	15	7.	0.0	2.0	*	15	SEP	2224	95	2.	0.0	0.5	*	16	SEP	0624	175	2.	0.0	0.5	
15	SEP	1430	16	7.	0.0	2.0	*	15	SEP	2230	96	2.	0.0	0.5	*	16	SEP	0630	176	2.	0.0	0.5	
15	SEP	1436	17	7.	0.0	2.0	*	15	SEP	2236	97	2.	0.0	0.5	*	16	SEP	0636	177	2.	0.0	0.5	
15	SEP	1442	18	7.	0.0	2.0	*	15	SEP	2242	98	2.	0.0	0.5	*	16	SEP	0642	178	2.	0.0	0.5	
15	SEP	1448	19	7.	0.0	2.0	*	15	SEP	2248	99	2.	0.0	0.5	*	16	SEP	0648	179	2.	0.0	0.5	
15	SEP	1454	20	7.	0.0	2.0	*	15	SEP	2254	100	2.	0.0	0.5	*	16	SEP	0654	180	2.	0.0	0.5	
15	SEP	1500	21	7.	0.0	2.0	*	15	SEP	2300	101	2.	0.0	0.5	*	16	SEP	0700	181	2.	0.0	0.5	
15	SEP	1506	22	7.	0.0	2.0	*	15	SEP	2306	102	2.	0.0	0.5	*	16	SEP	0706	182	2.	0.0	0.5	
15	SEP	1512	23	7.	0.0	2.0	*	15	SEP	2312	103	2.	0.0	0.5	*	16	SEP	0712	183	2.	0.0	0.5	
15	SEP	1518	24	7.	0.0	2.0	*	15	SEP	2318	104	2.	0.0	0.5	*	16	SEP	0718	184	2.	0.0	0.5	
15	SEP	1524	25	7.	0.0	2.0	*	15	SEP	2324	105	2.	0.0	0.5	*	16	SEP	0724	185	2.	0.0	0.5	
15	SEP	1530	26	5.	0.0	1.4	*	15	SEP	2330	106	2.	0.0	0.5	*	16	SEP	0730	186	2.	0.0	0.5	
15	SEP	1536	27	3.	0.0	0.9	*	15	SEP	2336	107	2.	0.0	0.5	*	16	SEP	0736	187	2.	0.0	0.5	
15	SEP	1542	28	4.	0.0	1.0	*	15	SEP	2342	108	2.	0.0	0.5	*	16	SEP	0742	188	2.	0.0	0.5	
15	SEP	1548	29	3.	0.0	1.0	*	15	SEP	2348	109	2.	0.0	0.5	*	16	SEP	0748	189	2.	0.0	0.5	
15	SEP	1554	30	4.	0.0	1.0	*	15	SEP	2354	110	2.	0.0	0.5	*	16	SEP	0754	190	2.	0.0	0.5	
15	SEP	1600	31	4.	0.0	1.0	*	16	SEP	0000	111	2.	0.0	0.5	*	16	SEP	0800	191	2.	0.0	0.5	
15	SEP	1606	32	4.	0.0	1.0	*	16	SEP	0006	112	2.	0.0	0.5	*	16	SEP	0806	192	2.	0.0	0.5	
15	SEP	1612	33	4.	0.0	1.0	*	16	SEP	0012	113	2.	0.0	0.5	*	16	SEP	0812	193	2.	0.0	0.5	
15	SEP	1618	34	4.	0.0	1.0	*	16	SEP	0018	114	2.	0.0	0.5	*	16	SEP	0818	194	2.	0.0	0.5	

15 SEP 1624	35	4.	0.0	1.0	SEP 0024	115	2.	0.0	0.5	SEP 0824	195	2.	0.0	0.5
15 SEP 1630	36	4.	0.0	1.0 *	16 SEP 0030	116	2.	0.0	0.5 *	16 SEP 0830	196	2.	0.0	0.5
15 SEP 1636	37	4.	0.0	1.0 *	16 SEP 0036	117	2.	0.0	0.5 *	16 SEP 0836	197	2.	0.0	0.5
15 SEP 1642	38	4.	0.0	1.0 *	16 SEP 0042	118	2.	0.0	0.5 *	16 SEP 0842	198	2.	0.0	0.5
15 SEP 1648	39	4.	0.0	1.0 *	16 SEP 0048	119	2.	0.0	0.5 *	16 SEP 0848	199	2.	0.0	0.5
15 SEP 1654	40	4.	0.0	1.0 *	16 SEP 0054	120	2.	0.0	0.5 *	16 SEP 0854	200	2.	0.0	0.5
15 SEP 1700	41	4.	0.0	1.0 *	16 SEP 0100	121	2.	0.0	0.5 *	16 SEP 0900	201	2.	0.0	0.5
15 SEP 1706	42	4.	0.0	1.0 *	16 SEP 0106	122	2.	0.0	0.5 *	16 SEP 0906	202	2.	0.0	0.5
15 SEP 1712	43	4.	0.0	1.0 *	16 SEP 0112	123	2.	0.0	0.5 *	16 SEP 0912	203	2.	0.0	0.5
15 SEP 1718	44	4.	0.0	1.0 *	16 SEP 0118	124	2.	0.0	0.5 *	16 SEP 0918	204	2.	0.0	0.5
15 SEP 1724	45	4.	0.0	1.0 *	16 SEP 0124	125	2.	0.0	0.5 *	16 SEP 0924	205	2.	0.0	0.5
15 SEP 1730	46	4.	0.0	1.0 *	16 SEP 0130	126	2.	0.0	0.5 *	16 SEP 0930	206	2.	0.0	0.5
15 SEP 1736	47	4.	0.0	1.0 *	16 SEP 0136	127	2.	0.0	0.5 *	16 SEP 0936	207	2.	0.0	0.5
15 SEP 1742	48	4.	0.0	1.0 *	16 SEP 0142	128	2.	0.0	0.5 *	16 SEP 0942	208	2.	0.0	0.5
15 SEP 1748	49	4.	0.0	1.0 *	16 SEP 0148	129	2.	0.0	0.5 *	16 SEP 0948	209	2.	0.0	0.5
15 SEP 1754	50	4.	0.0	1.0 *	16 SEP 0154	130	2.	0.0	0.5 *	16 SEP 0954	210	2.	0.0	0.5
15 SEP 1800	51	4.	0.0	1.0 *	16 SEP 0200	131	2.	0.0	0.5 *	16 SEP 1000	211	2.	0.0	0.5
15 SEP 1806	52	4.	0.0	1.0 *	16 SEP 0206	132	2.	0.0	0.5 *	16 SEP 1006	212	2.	0.0	0.5
15 SEP 1812	53	4.	0.0	1.0 *	16 SEP 0212	133	2.	0.0	0.5 *	16 SEP 1012	213	2.	0.0	0.5
15 SEP 1818	54	4.	0.0	1.0 *	16 SEP 0218	134	2.	0.0	0.5 *	16 SEP 1018	214	2.	0.0	0.5
15 SEP 1824	55	4.	0.0	1.0 *	16 SEP 0224	135	2.	0.0	0.5 *	16 SEP 1024	215	2.	0.0	0.5
15 SEP 1830	56	4.	0.0	1.0 *	16 SEP 0230	136	2.	0.0	0.5 *	16 SEP 1030	216	2.	0.0	0.5
15 SEP 1836	57	4.	0.0	1.0 *	16 SEP 0236	137	2.	0.0	0.5 *	16 SEP 1036	217	2.	0.0	0.5
15 SEP 1842	58	4.	0.0	1.0 *	16 SEP 0242	138	2.	0.0	0.5 *	16 SEP 1042	218	2.	0.0	0.5
15 SEP 1848	59	4.	0.0	1.0 *	16 SEP 0248	139	2.	0.0	0.5 *	16 SEP 1048	219	2.	0.0	0.5
15 SEP 1854	60	4.	0.0	1.0 *	16 SEP 0254	140	2.	0.0	0.5 *	16 SEP 1054	220	2.	0.0	0.5
15 SEP 1900	61	4.	0.0	1.0 *	16 SEP 0300	141	2.	0.0	0.5 *	16 SEP 1100	221	2.	0.0	0.5
15 SEP 1906	62	4.	0.0	1.0 *	16 SEP 0306	142	2.	0.0	0.5 *	16 SEP 1106	222	2.	0.0	0.5
15 SEP 1912	63	4.	0.0	1.0 *	16 SEP 0312	143	2.	0.0	0.5 *	16 SEP 1112	223	2.	0.0	0.5
15 SEP 1918	64	4.	0.0	1.0 *	16 SEP 0318	144	2.	0.0	0.5 *	16 SEP 1118	224	2.	0.0	0.5
15 SEP 1924	65	4.	0.0	1.0 *	16 SEP 0324	145	2.	0.0	0.5 *	16 SEP 1124	225	2.	0.0	0.5
15 SEP 1930	66	4.	0.0	1.0 *	16 SEP 0330	146	2.	0.0	0.5 *	16 SEP 1130	226	2.	0.0	0.5
15 SEP 1936	67	4.	0.0	1.0 *	16 SEP 0336	147	2.	0.0	0.5 *	16 SEP 1136	227	2.	0.0	0.5
15 SEP 1942	68	4.	0.0	1.0 *	16 SEP 0342	148	2.	0.0	0.5 *	16 SEP 1142	228	2.	0.0	0.5
15 SEP 1948	69	4.	0.0	1.0 *	16 SEP 0348	149	2.	0.0	0.5 *	16 SEP 1148	229	2.	0.0	0.5
15 SEP 1954	70	4.	0.0	1.0 *	16 SEP 0354	150	2.	0.0	0.5 *	16 SEP 1154	230	2.	0.0	0.5
15 SEP 2000	71	4.	0.0	1.0 *	16 SEP 0400	151	2.	0.0	0.5 *	16 SEP 1200	231	2.	0.0	0.5
15 SEP 2006	72	4.	0.0	1.0 *	16 SEP 0406	152	2.	0.0	0.5 *	16 SEP 1206	232	2.	0.0	0.5
15 SEP 2012	73	4.	0.0	1.0 *	16 SEP 0412	153	2.	0.0	0.5 *	16 SEP 1212	233	2.	0.0	0.5
15 SEP 2018	74	4.	0.0	1.0 *	16 SEP 0418	154	2.	0.0	0.5 *	16 SEP 1218	234	2.	0.0	0.5
15 SEP 2024	75	4.	0.0	1.0 *	16 SEP 0424	155	2.	0.0	0.5 *	16 SEP 1224	235	2.	0.0	0.5
15 SEP 2030	76	4.	0.0	1.0 *	16 SEP 0430	156	2.	0.0	0.5 *	16 SEP 1230	236	2.	0.0	0.5
15 SEP 2036	77	4.	0.0	1.0 *	16 SEP 0436	157	2.	0.0	0.5 *	16 SEP 1236	237	2.	0.0	0.5
15 SEP 2042	78	4.	0.0	1.0 *	16 SEP 0442	158	2.	0.0	0.5 *	16 SEP 1242	238	2.	0.0	0.5
15 SEP 2048	79	4.	0.0	1.0 *	16 SEP 0448	159	2.	0.0	0.5 *	16 SEP 1248	239	2.	0.0	0.5
15 SEP 2054	80	4.	0.0	1.0 *	16 SEP 0454	160	2.	0.0	0.5 *	16 SEP 1254	240	2.	0.0	0.5

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW					
		6-HR	24-HR	72-HR	23.90-HR	(CFS)	(HR)
		38.	0.50	7.	3.	3.	
		(INCHES)	0.476	0.880	0.880		
		(AC-FT)	4.	7.	7.		

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE					
		6-HR	24-HR	72-HR	23.90-HR	(AC-FT)	(HR)
0.	0.50	0.	0.	0.	0.		

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE					
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STATION FLOW

(I) INFLOW, (O) OUTFLOW

	0.	10.	20.	30.	40.	50.	60.	70.	0.	0.	0.	0.	0.
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.0	0.0

(S) STORAGE

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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DAHRMN PER

151300 11-----S-----.

151306 2. O I S

151312 3. . O . I S

151318 4. . . O I . . . S

151324 5. . . . O I . . S

151330 6. I O S

151336 7. . I . . O S

151342 8. . I . O S

151348 9. . I O S

151354 10. I O S

151400 11. . I S

151406 12. I S

151412 13. I S

151418 14. I S

151424 15. I S

151430 16. I S

151436 17. I S

151442 18. I S

151448 19. I S

151454 20. I S

151500 21. . I S

151506 22. I S

151512 23. I S

151518 24. I S

151524 25. I S

151530 26. IO S

151536 27. OI S

151542 28. I S

151548 29. OI S

151554 30. I S

151600 31. I S

151606 32. I S

151612 33. I S

151618 34. I S

151624 35. I S

151630 36. I S

151636 37. I S

151642 38. I S

151648 39. I S

151654 40. I S

151700 41. I S

151706 42. I S

151712 43. I S

151718 44. I S

151724 45. I S

151730 46. I S

151736 47. I S

151742 48. I S

151748 49. I S

151754 50. I S

151800 51. I S

151806 52. I S

151812 53. I S

160018	114.	I	S
160024	115.	I	S
160030	116.	I	S
160036	117.	I	S
160042	118.	I	S
160048	119.	I	S
160054	120.	I	S
160100	121.	I	S
160106	122.	I	S
160112	123.	I	S
160118	124.	I	S
160124	125.	I	S
160130	126.	I	S
160136	127.	I	S
160142	128.	I	S
160148	129.	I	S
160154	130.	I	S
160200	131.	I	S
160206	132.	I	S
160212	133.	I	S
160218	134.	I	S
160224	135.	I	S
160230	136.	I	S
160236	137.	I	S
160242	138.	I	S
160248	139.	I	S
160254	140.	I	S
160300	141.	I	S
160306	142.	I	S
160312	143.	I	S
160318	144.	I	S
160324	145.	I	S
160330	146.	I	S
160336	147.	I	S
160342	148.	I	S
160348	149.	I	S
160354	150.	I	S
160400	151.	I	S
160406	152.	I	S
160412	153.	I	S
160418	154.	I	S
160424	155.	I	S
160430	156.	I	S
160436	157.	I	S
160442	158.	I	S
160448	159.	I	S
160454	160.	I	S
160500	161.	I	S
160506	162.	I	S
160512	163.	I	S
160518	164.	I	S
160524	165.	I	S
160530	166.	I	S
160536	167.	I	S
160542	168.	I	S
160548	169.	I	S
160554	170.	I	S
160600	171.	I	S
160606	172.	I	S
160612	173.	I	S

160618	174.	I	S
160624	175.	I	S
160630	176.	I	S
160636	177.	I	S
160642	178.	I	S
160648	179.	I	S
160654	180.	I	S
160700	181.	I	S
160706	182.	I	S
160712	183.	I	S
160718	184.	I	S
160724	185.	I	S
160730	186.	I	S
160736	187.	I	S
160742	188.	I	S
160748	189.	I	S
160754	190.	I	S
160800	191.	I	S
160806	192.	I	S
160812	193.	I	S
160818	194.	I	S
160824	195.	I	S
160830	196.	I	S
160836	197.	I	S
160842	198.	I	S
160848	199.	I	S
160854	200.	I	S
160900	201.	I	S
160906	202.	I	S
160912	203.	I	S
160918	204.	I	S
160924	205.	I	S
160930	206.	I	S
160936	207.	I	S
160942	208.	I	S
160948	209.	I	S
160954	210.	I	S
161000	211.	I	S
161006	212.	I	S
161012	213.	I	S
161018	214.	I	S
161024	215.	I	S
161030	216.	I	S
161036	217.	I	S
161042	218.	I	S
161048	219.	I	S
161054	220.	I	S
161100	221.	I	S
161106	222.	I	S
161112	223.	I	S
161118	224.	I	S
161124	225.	I	S
161130	226.	I	S
161136	227.	I	S
161142	228.	I	S
161148	229.	I	S
161154	230.	I	S
161200	231.	I	S
161206	232.	I	S
161212	233.	I	S

161218	234. I	.	.	.	.	.	S	.	.	.	.	.	.
161224	235. I	.	.	.	.	.	S	.	.	.	.	.	.
161230	236. I	.	.	.	.	.	S	.	.	.	.	.	.
161236	237. I	.	.	.	.	.	S	.	.	.	.	.	.
161242	238. I	.	.	.	.	.	S	.	.	.	.	.	.
161248	239. I	.	.	.	.	.	S	.	.	.	.	.	.
161254	240.-I	.	.	.	.	.	S	.	.	.	.	.	.

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT		FACE		64. 0.40	7.	3.	3. 0.14
ROUTED TO		FLOW		38. 0.50	7.	3.	3. 0.14

*** NORMAL END OF HEC-1 ***